

## SPECIFICATION

### TITLE OF THE INVENTION PROTECTING TOOL FOR SHOE

#### BACKGROUND OF THE INVENTION

##### Field of the Invention

The present invention relates to a protecting tool for a shoe for protecting an instep and securing safety.

##### Description of the Background Art

In order to protect tiptoes, there are known safety shoes. In each of the safety shoes, a core material made of steel plate or hard resin is attached to a tiptoe portion of the shoe. When a construction material or a tool falls, this core material receives such a construction material or tool, thereby protecting the tiptoes. There are also known shoes in which the core materials are rendered detachable to the tiptoe portions to lighten the shoes so that it is easy to walk for a long distance (see patent document 1 for example).

[Patent Document 1]

Japanese Patent Application Laid-open No. JP09-187304

In the safety shoes described in the patent document 1, a tiptoe portion is formed with a core material accommodating section, and the core material is accommodated in and taken out

from the core material accommodating section. However, when a user takes a tour of a factory or inspect the factory, in order to protect feet of the tourist or the inspector, it is necessary for the tourist or inspector to change his or her shoes such as ordinary leather shoes or sneakers to safety shoes. When the tourist or inspector changes the shoes, it is necessary to manage the changed shoes, and the tourist or inspector may feel it to be troublesome to change the shoes. Further, since a lower edge of the core material is connected to a bottom of the shoe, if an article with some degree of weight falls on the shoe, the core material may be deformed and the article may abut against the instep, an impact of the article may be transmitted to the instep through the shoe, and a foot of the tourist or inspector may be injured.

It is an object of the present invention to solve the above problems.

#### SUMMARY OF THE INVENTION

The present invention provides a protecting tool for a shoe comprising an overshoe type attaching member which is put on over a footwear in a state of wearing the footwear, and a protecting member having rigidity and attached to the attaching member so as to cover at least an instep portion, wherein the protecting member comprises a curved portion which is curved along at least a shape of the instep portion, and a leg portion

which comes into contact with the ground when the curved portion receives an impact so that the curved portion is prevented from moving toward the instep portion in a state in which the curved portion is spaced from the instep portion, and the attaching member comprises holding means for holding the protecting member such that a lower end edge of the leg portion is located above a ground-contact surface except a case in which the protecting member receives an impact.

According to the protecting tool for the shoe, since the protecting member is attached to the overshoe type attaching member, it is possible to easily wear the protecting tool in a state in which a user wears a footwear such as an ordinary shoe, a rubber boot, a split-toed sock or the like, and it is possible to protect the instep of the tourist or inspector at a worksite where safety shoes are required without forcing him or her to change the shoes. Further, since the protecting member is held by the holding means such that the lower end edge of the leg portion of the protecting member is located above the ground-contact surface, the protecting member does not hinder the walking. If the curved portion of the protecting member receives an impact, the leg portion of the protecting member comes into contact with the ground and prevents the curved portion from moving toward the instep portion. Therefore, it is possible to prevent the impact from being transmitted to the instep portion of the wearer. When the attaching member or the protecting member

is worn, only the worn member may be replaced and thus, the costs can be reduced. The footwear includes a shoe, a split-toed sock, a sandal, zori, geta and the like. The ground contact surface includes a general surface with which the bottom surface of the protecting tool for the shoe comes into contact such as a ground surface, a pavement surface, floor surfaces of a building and a staircase and the like.

According to an aspect for easily attaching the protecting member to the attaching member, the holding means includes an engaging portion provided between the attaching member and the protecting member.

As one example of the above-mentioned concrete aspect of the protecting tool for the shoe, the engaging portion comprises a first engaging portion formed in front portions of the attaching member and the protecting member, and a second engaging portion formed in rear portions of the attaching member and the protecting member and turnably engaging with the protecting member. With this example, when the protecting member vertically moves, since the rear portion of the protecting member turns around the second engaging portion, the protecting member does not interfere with an ankle of the wearer, and when the wearer wears the protecting tool for the shoe, the wearer is not prevented from walking.

As another aspect for easily realizing the protecting tool for the shoe, the first engaging portion comprises a holding projection provided on one of the attaching member and the

protecting member, and a portion to be engaged provided on the other one of the attaching member and the protecting member, and the second engaging portion comprises a holding shaft provided on one of the attaching member and the protecting member, and a mounting hole provided on the other one of the attaching member and the protecting member.

The attaching member comprises an attachment bottom which supports a bottom of a footwear, and an attaching member body which is made of resiliently deformable material and which urges the footwear so as to fix the footwear on the attachment bottom. With this configuration, since the attaching member body made of resiliently deformable material urges the footwear so as to press the same, it is possible to bring the footwear into intimate contact with the protecting tool for the shoe, and the protecting tool can be reliably attached.

The protecting member is laterally symmetric with respect to a center in the widthwise direction thereof. The protecting member having the same shape can be attached to any of the left and right attaching members, the parts can be used commonly and the costs can further be reduced.

In addition, if the protecting member is made of synthetic resin, it is possible to reduce the weight of the protecting member while keeping the same rigidity as that of the conventional aspect in which the core material made of steel plate is attached to the shoe, and it is possible to reduce an uncomfortable feeling

when walking or running in a state in which the protecting tool is attached.

If the protecting tool for the shoe according to the present invention is employed, since the protecting member is attached to the overshoe type attaching member, a user wearing a footwear such as an ordinary shoe, a rubber boot, a split-toed sock or the like can easily wear the protecting tool, and it is possible to protect the instep of the tourist or inspector at a worksite where safety shoes are required without forcing him or her to change the shoes. Further, since the protecting member is held by the holding means such that the lower end edge of the leg portion of the protecting member is located above the ground-contact surface, the protecting member does not hinder the walking. If the curved portion of the protecting member receives an impact, the leg portion of the protecting member comes into contact with the ground and prevents the curved portion from moving toward the instep portion. Therefore, it is possible to prevent the impact from being transmitted to the instep portion of the wearer. When the attaching member or the protecting member is worn, only the worn member may be replaced and thus, the costs can be reduced.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a side view of a protecting tool for a shoe according to an embodiment of the present invention.

Fig. 2 is a plan view of the protecting tool of the shoe according to the embodiment.

Fig. 3 is a side view showing an attaching member of the protecting tool for the shoe according to the embodiment.

Fig. 4 is a plan view of the attaching member of the protecting tool for the shoe according to the embodiment.

Fig. 5 is a side view showing a protecting member of the protecting tool of the shoe according to the embodiment.

Fig. 6 is a plan view showing the protecting member of the protecting tool of the shoe according to the embodiment.

Fig. 7 illustrates operation of the protecting tool for the shoe according to the embodiment.

Fig. 8 illustrates an example of a first attachment bottom and a second attachment bottom of the protecting tool for the shoe according to the embodiment.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

An embodiment of the present invention will be explained with reference to the drawings.

Fig. 1 is a side view and Fig. 2 is a plan view of a protecting tool 1 for a shoe according to this embodiment. The protecting tool 1 includes an overshoe type attaching member 2 which is put on over a shoe 9 as a footwear in a state of wearing the shoe 9, and a protecting member 3 attached to the attaching member 2 so as to cover at least an instep portion of the shoe 9. The

protecting member 3 has rigidity and is curved along at least a shape of the instep portion of the shoe 9.

Fig. 3 is a side view of the attaching member 2 and Fig. 4 is a plan view of the attaching member 2. As shown in Figs. 1 to 4, the attaching member 2 includes a first attachment bottom 22 which supports a front bottom portion of the shoe 9, a second attachment bottom 23 which supports a rear bottom portion of the shoe 9, an attaching member body 21 which urges the first attachment bottom 22 and the second attachment bottom 23 so as to fix the shoe 9 to the bottoms 22 and 23, and a strap 29 which is attached to a rear portion of the attaching member body 21 and which urges the shoe 9 toward the attaching member body 21 in a state in which the protecting tool 1 for the shoe 9 is mounted.

The attaching member body 21 is made of synthetic rubber which is resiliently deformable so that the attaching member body 21 can intimately be contacted with the shoe 9 when the attaching member body 21 is mounted from above the shoe 9. More specifically, the attaching member body 21 includes an instep portion 211 having a reversed V-shape as viewed from above, and a rib portion 212 which connects a rear end of the first attachment bottom 22 and the instep portion 211 with each other. The instep portion 211 covers the instep portion of the shoe 9, a front end of the instep portion 211 is connected to a front end of the first attachment bottom 22 and rear ends of the instep portion 211 are connected to opposite side ends of the second attachment



bottom 23. The instep portion 211 and the rib portion 212 are integrally formed together, and the strap 29 is mounted to the rear end of the instep portion 211.

Opposite ends of the strap 29 are connected to the rear ends of the instep portion 211 of the attaching member body 21 in a state in which the protecting tool 1 for the shoe is attached. The strap 29 is made of resiliently deformable synthetic rubber so as to urge the shoe 9 toward the forward attaching member body 21 by resilience and to come into intimate contact with the tiptoe portion of the attaching member body 21. In this embodiment, the opposite ends of the strap 29 are fixed to the rear ends of the instep portion 211 of the attaching member body 21, but one end or both ends of the strap 29 may be rendered detachable to the attaching member body 21. A pair of strings or bands may be used, in which one end of the pair of strings or bands may be fixed to one of the rear ends of the instep portion 211 and the other end may be constituted as in a belt widely used for clothing so as to vary a length thereof.

The first attachment bottom 22 and the second attachment bottom 23, whose material and shape are selected from various materials and shapes in accordance with its purpose, are mounted to the attaching member body 21. In a factory or a kitchen, the first attachment bottom 22 and the second attachment bottom 23 have oil resistance and slip resistance and weep holes 22x and 23x as shown in Fig. 4. In a forest or a slope, the first

attachment bottom 22 and the second attachment bottom 23 are formed with a bottom surface 22a and a bottom surface 23a, respectively, as shown in Fig. 8.

Fig. 5 is a side view of the protecting member 3 and Fig. 6 is a plan view of the protecting member 3. The protecting member 3 is made of ABS resin in this embodiment. As shown in Figs. 1, 2, 5 and 6, the protecting member 3 includes a curved portion 31 for covering the instep portion of the shoe 9, and a leg portion 32 which comes into contact with the ground when the curved portion 31 receives an impact, thereby preventing the curved portion 31 from moving toward the instep portion in a state in which the curved portion 31 is spaced from the instep portion of the shoe 9. The protecting member 3 has enough rigidity to endure an impact caused when an article such as material or tool in a working site falls. A front portion of a lower end edge 32a of the leg portion 32 is inclined toward a front and upper direction so as to prevent the front portion of the lower end edge 32a from coming into contact with the ground when walking and from hindering the walking. The protecting member 3 is provided with openings 3x so as to further reduce the weight. In this embodiment, the protecting member 3 is formed laterally symmetric with respect to a center line a in the widthwise direction as shown in Fig. 6. That is, the protecting member 3 can be attached to any of the attaching members 2 attached to left and right feet. As long as the protecting member 3 is

made of the material having enough rigidity to endure the impact caused when an article such as material or tool in a working site falls, that is, material having the almost same rigidity as that of steel plate used for conventional safety shoes, there may be used material other than the ABS resin such as polycarbonate resin, polypropylene resin or the like. The protecting member 3 may be made using a metal plate such as a steel plate. The protecting member 3 may also be made using impact-absorbing material such as Sorbothane (registered trademark). Although the protecting member 3 is provided with the openings 3x to reduce the weight while maintaining the rigidity in this embodiment, the protecting member 3 may be provided with thin portions having a small thickness instead of the openings 3x.

As shown in Figs. 1 to 6, in this embodiment, the protecting tool 1 for the shoe includes holding means 4 which holds the protecting member 3 such that the lower end edge 32a of the leg portion 32 is located above the ground-contact surface except a case in which the protecting member 3 receives an impact.

The holding means 4 is provided between the attaching member 2 and the protecting member 3. The holding means 4 includes an engaging portion comprising a first engaging portion 41 formed in front portions of the attaching member 2 and the protecting member 3, and a second engaging portion 42 which is formed in rear portions of the attaching member 2 and the protecting member 3 and which turnably engages with the

protecting member 3.

More specifically, the first engaging portion 41 is integrally formed with the instep portion 211 of the attaching member 2. The first engaging portion 41 includes a holding projection 411 projecting substantially horizontally or slightly upward from a portion near the tiptoe, and a held-hole 41x which is a held-portion capable of engaging with the holding projection 411 and which is provided at a portion abutting against the holding projection 411 on a lower surface of the curved portion 31 of the protecting member 3. In a state in which the protecting tool 1 for the shoe is attached, the holding projection 411 and the held-hole 41x are engaged with each other. Specifically, the holding projection 411 includes an engaging portion 411a having an engaging groove 411m, and a connecting portion 411b which connects the engaging portion 411a and the attaching member 2. The engaging groove 411m and an opening edge of the held-hole 41x are engaged with each other. A length of the connecting portion 411b of the holding projection 411 is set to a sufficient value to maintain a state in which the curved portion 31 of the protecting member 3 is spaced from the instep portion of the attaching member 2 when the protecting member 3 receives an impact and the lower end edge 32a of the leg portion 32 comes into contact with the ground. In the present embodiment, although the holding projection 411 is provided at only one location, the number of the holding projections 411 is not limited to one.

On the other hand, the second engaging portion 42 comprises a pair of left and right holding shafts 421 which project outward from a rear portion of the attaching member 2, and mounting holes 42x formed in a rear portion of the protecting member 3 to engage with the holding shafts 421. By engaging the mounting holes 42x and the holding shafts 421 with each other, the protecting member 3 is turnably supported by the attaching member 2 around the second engaging portion 42.

In a state in which the protecting tool 1 for the shoe is attached, if an article such as a material or a tool falls on the protecting member 3 and the protecting member 3 receives an impact, the protecting member 3 turns around the second engaging portion 42 as shown in Fig. 7, and the lower end edge 32a of the leg portion 32 of the protecting member 3 comes into contact with the ground. In a state in which the lower end edge 32a of the leg portion 32 of the protecting member 3 comes into contact with the ground, even if an article is on the protecting member 3, since the protecting member 3 does not move further downward, a foot in the shoe 9 is protected.

As described above, in this embodiment, since the attaching member 2 is of the overshoe type, a user can easily wear the protecting tool 1 for the shoe while wearing the ordinary shoe 9, and it is possible to protect an instep of a tourist or an inspector at the worksite without forcing him or her to change shoes. Further, since the attaching member 2 includes the

holding means 4 and the protecting member 3 is held such that the lower end edge 32a of the leg portion 32 of the protecting member 3 is located higher than at least the ground-contacting surface, a user is not prevented from walking when the user wears the protecting tool 1 for the shoe. If the curved portion 31 of the protecting member 3 receives an impact, the leg portion 32 of the protecting member 3 comes into contact with the ground and the curved portion 31 is prevented from moving toward the instep portion 211. Therefore, it is possible to prevent the impact from being transmitted to the instep portion of the user. In addition, when the attaching member 2 or the protecting member 3 is worn, only the worn member may be replaced and thus, it is possible to reduce the costs.

The holding means 4 is provided between the attaching member 2 and the protecting member 3, and the holding means 4 includes the first engaging portion 41 formed on the attaching member 2 and the front portion of the protecting member 3, and the second engaging portion 42 formed on the attaching member 2 and the rear portion of the protecting member 3 and turnably engaged with the protecting member 3. Therefore, it is possible to easily attach the protecting member 3 to the attaching member 2, and when the protecting member 3 is vertically moved, the rear portion of the protecting member 3 turns around the second engaging portion 42 and thus, the rear portion does not interfere with the ankle of the wearer, and the wearer is not prevented

from walking when he or she wears the protecting tool 1 for the shoe.

Further, the first engaging portion 41 comprises the holding projection 411 provided on the attaching member 2 and the held-hole 41x provided in the protecting member 3, and the second engaging portion 42 comprises the holding shafts 421 provided on the attaching member 2 and the mounting holes 42x provided in the protecting member 3. Therefore, it is possible to easily form the first engaging portion 41 and the second engaging portion 42.

In addition, the attaching member 2 includes the first and second attachment bottoms 22 and 23 which support the bottom of the shoe 9, and the attaching member body 21 which is made of synthetic rubber and which urges the shoe 9 against the first and second attachment bottoms 22 and 23 so as to fix the shoe 9. Therefore, the attaching member body 21 made of synthetic rubber urges the shoe 9 so as to press the shoe 9 and it is possible to effectively bring the shoe 9 into intimate contact with the protecting tool 1 for the shoe. Even if the attaching member body 21 is made of resiliently deformable material such as natural rubber or elastomer other than the synthetic resin, the same effect can be obtained.

Since the protecting member 3 has a laterally symmetric shape with respect to the center a in the widthwise direction, the protecting member 3 can be attached to any of the attaching

members 2 attached to left and right feet. Therefore, the parts can commonly be used and the costs can be reduced.

Since the protecting member 3 is made of polypropylene resin, it is possible to reduce the weight while keeping the rigidity as compared with the conventional aspect in which a core material made of steel plate is attached to a shoe, and it is possible to reduce an uncomfortable feeling when walking or running in a state in which the protecting tool 1 is attached. Even if the protecting member 3 is made of synthetic resin other than polypropylene resin, the same effect can be obtained only if the synthetic resin has at least the same or higher rigidity than that of the steel plate.

The present invention is not limited to the above-described embodiment.

For example, in the above-mentioned embodiment, although the first engaging portion 41 is integrally formed with the holding projection together with the instep portion 211 of the attaching member 2, the held-portion is provided on a portion of the protecting member which abuts against the holding projection on the lower surface of the curved portion of the protecting member such that the held-portion can engage with the holding projection, thereby forming the first engaging portion. On the contrary, the holding projection may of course project inward from a front portion on the side of the protecting member, and the held-portion capable of engaging with the holding



projection may be provided on the front portion of the attaching member, thereby forming the first engaging portion.

The pair of left and right mounting shafts outward project from the rear portion of the attaching member, and the mounting holes 42x capable of engaging with the mounting shafts are provided in the rear portion of the protecting member, thereby forming the second engaging portion. On the contrary, the pair of left and right mounting shafts may of course project from the rear portion of the protecting member, and the mounting holes 42x capable of engaging with the mounting shafts may be provided in the rear portion of the attaching member, thereby forming the second engaging portion.

Other concrete structures of various portions are not limited to those in the above embodiment, and the present invention can variously be modified within a range not departing from the subject matter of the invention.